

Dish Markets

SES



Products and Systems

SAIC/STM Power



* Dish Stirling

* Concentrating PV

ADDs/WGA

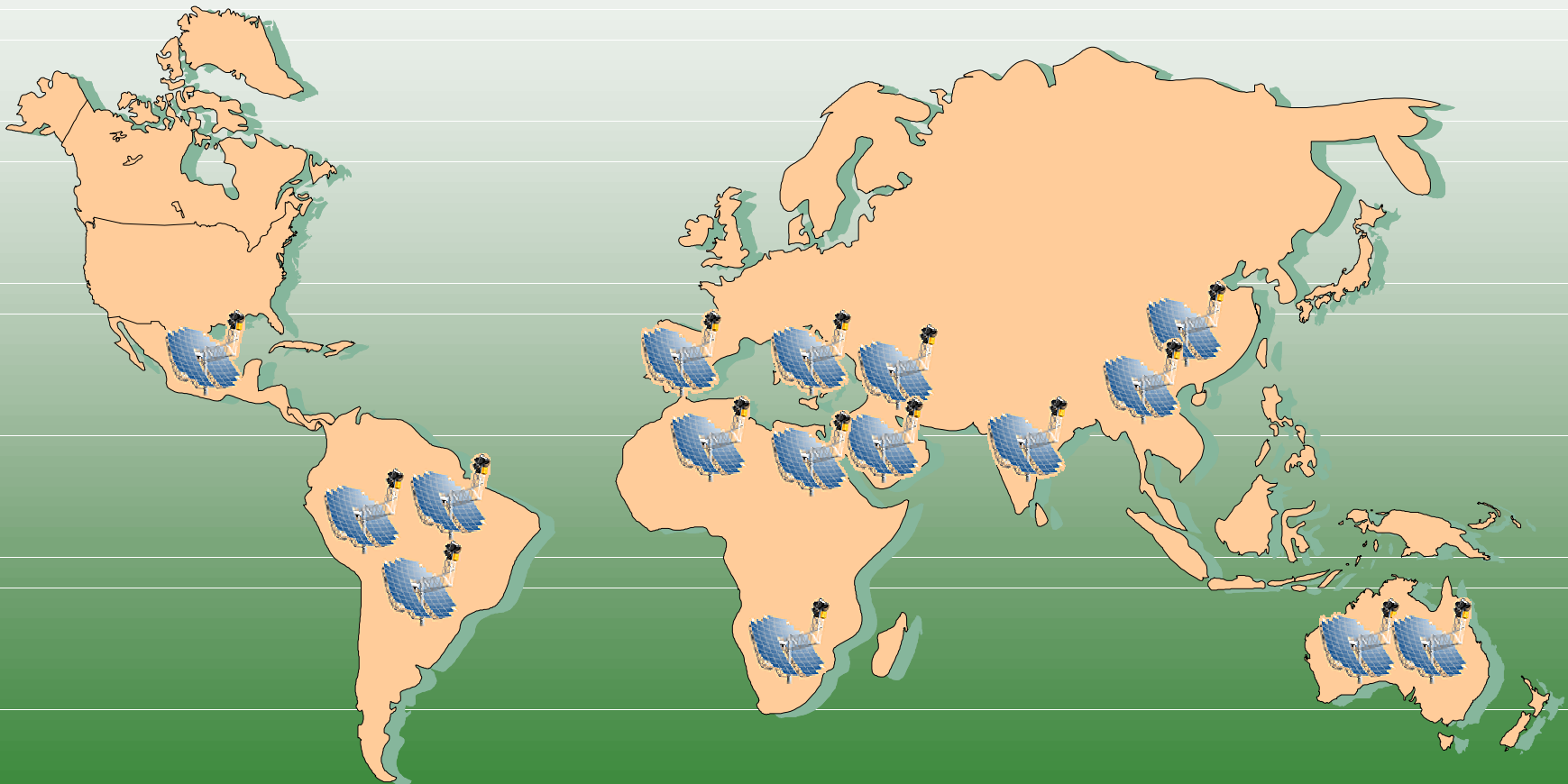


United States Dish Markets

Potential for 1,000+ MW In 5 Years



International Dish Markets



Dish Markets

BOTH Distributed & Central Grid Tie



Six Distinct Markets for Dishes

★ Small (Nom. 9 kW):

- ✓ Water Pumping
- ✓ Remote Power (Small Villages)

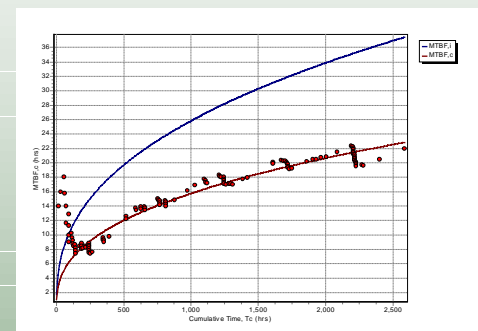
★ Larger (25 – 30 kW):

- ✓ Domestic Grid Tie
- ✓ International Grid Tie
- ✓ Remote Power (Villages)
- ✓ Distributed Power – IPPs, Desalination, etc.

Market Challenges for Dishes - Reliability

★ Initial Results Based on Prototype Systems

✓ Showing Improvement



★ Larger-Scale Tests Required

✓ Difficult To Interpret Results From Samples Of 1 –2

★ Suggests Need To Focus Initially On More Centralized Power Plants Vs Widely-Dispersed Distributed Applications

Market Challenges for Dishes - Cost/Price Competitiveness

★ At Production Volumes of <50

- ✓ Cost is \$8,000 - \$10,000 Per KW
- ✓ Not Price Competitive

★ At Production Volumes of 500 – 1,000

- ✓ Projected Cost is \$3,000 - \$3,500 Per KW
- ✓ Cost of Electricity*
 - * First 15 Years -- \$.16/ - .18/kWh
 - * Next 15 Years -- \$.015 -.02/kWh
 - * Levelized Lifetime -- \$.085 - .10/kWh

*** Based on 10% Cap. Cost, 15 Years**

Market Challenges for Dishes

- Cost/Price Competitiveness (con't)

★ At Production Volumes > 10,000/Yr.

✓ Projected Cost is \$1,000 - \$1,500 Per KW

✓ Cost of Electricity*

* First 15 Years -- \$. 075 - \$.11/kWh

* Next 15 Years -- \$.01-.015/kWh (O & M Costs)

* Levelized Lifetime -- \$.043 -.063 /kWh

*** Based on 10% Cap. Cost, 15 Years**

Dish Market Entry Strategies

★ Continue Reliability & Cost Reduction Studies

- ✓ 1 MW (40-Dish) Project
- ✓ Continue DECC, etc. Programs

★ Develop Medium-Scale Projects

Where Solar Is Specifically Called For

- ✓ CA, NV, AZ –States With Solar Incentive Programs
- ✓ International – Spain, Italy, Australia, China

Dish Market Rollout Strategies

- ★ **Move Into Higher-Value Distributed Markets As Reliability Improves**
- ★ **Expand Domestic & Foreign Grid Markets As Costs Come Down**
- ★ **Continue Education Programs To Gain Support For Renewables Based On Other Factors Than Direct Energy Cost**

Other Considerations For Dish And Other Solar Products

- ★ **Not All Eggs In One Basket**

*(Heavy Dependence on Nat'l. Gas & Coal
Is Risky & Environmentally Unsound)*

- ★ **Global Appeal for US Solar Products**

(Make US Jobs, Improve Balance of Payments)

- ★ **Environmental Considerations &
“Externality” Costs**

*(Global Warming; Smog, Water, & Land Pollution; Health
Costs)*

- ★ **Domestic Security Issues**

*(Reduce Dependence on Foreign Oil & Nat. Gas,
Stop Bankrolling Terrorist Regimes)*

All Our Eggs ...

> If ever there was a time to get
all our energy from one source,
this isn't it.



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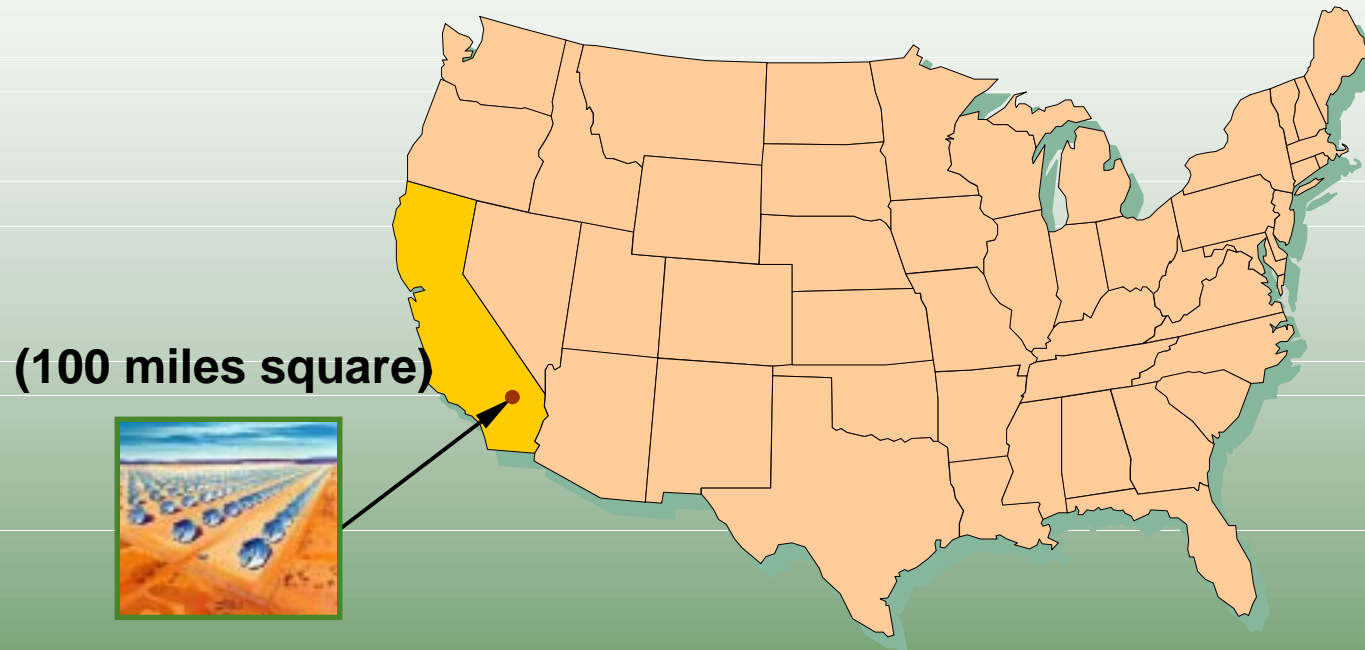
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Solar Hydrogen Potential



★ Amount of land required to displace U.S. fossil fuel consumption with solar-produced hydrogen

- ✓ Assumes 30% efficient solar dish Stirling systems; and
- ✓ 84% efficient electrolyzers to produce hydrogen

Dish Market Conclusions

- ★ **Solar Dish Systems Are Uniquely Capable Of Serving Both Distributed & Centralized Grid Tie Markets**
- ★ **These Are Vast Worldwide Markets**
- ★ **Keys To Success Are Increased Reliability & Lower Costs**
- ★ **Dish Systems Can Provide Major Key To Future Solar Hydrogen Economy**